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US 4318882 A

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INT CL<sup>6</sup> B65D 1/02 1/32 1/40 23/10  
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(54) Abstract Title

Dispensing container suitable for children and adults

(57) A container 6, designed to be easily used by children and the elderly, comprises a body 22 with recesses 15, 16 on front and rear sides 13, 14 defining first and second panels 17, 18, and a neck 3 defining an opening 1. The container may be made of a mixture of different density polyethylenes, and may be used as a dispenser for liquids, solids such as talcum powder (fig 8), foams, or aerosols (fig 7). The container may have a closure with a flat surface that allows the container to be stored in an inverted position (fig 14), or alternatively, the container may be kept inverted by a pair of supports (71, 72, fig 13) that cooperate with the recesses of the body. The closure may be in the form of a press-fit, snap-on, snap and turn, or an oriented thread lid, and the container may also be provided with finger grips (25, 26, fig 3A). A valve (80, fig 15A) may also be provided that has a threshold pressure below which the contents of the container will not be dispensed, but which can be easily activated by children or the elderly.

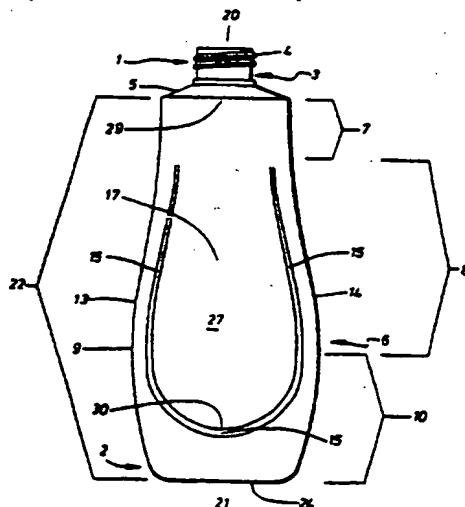


FIG. 1A

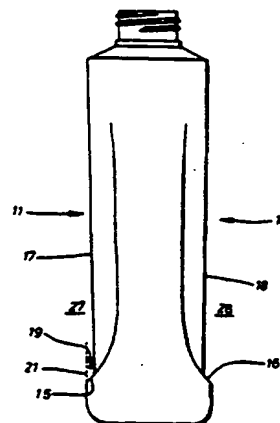


FIG. 1B

[illegible]

FIG. 1A

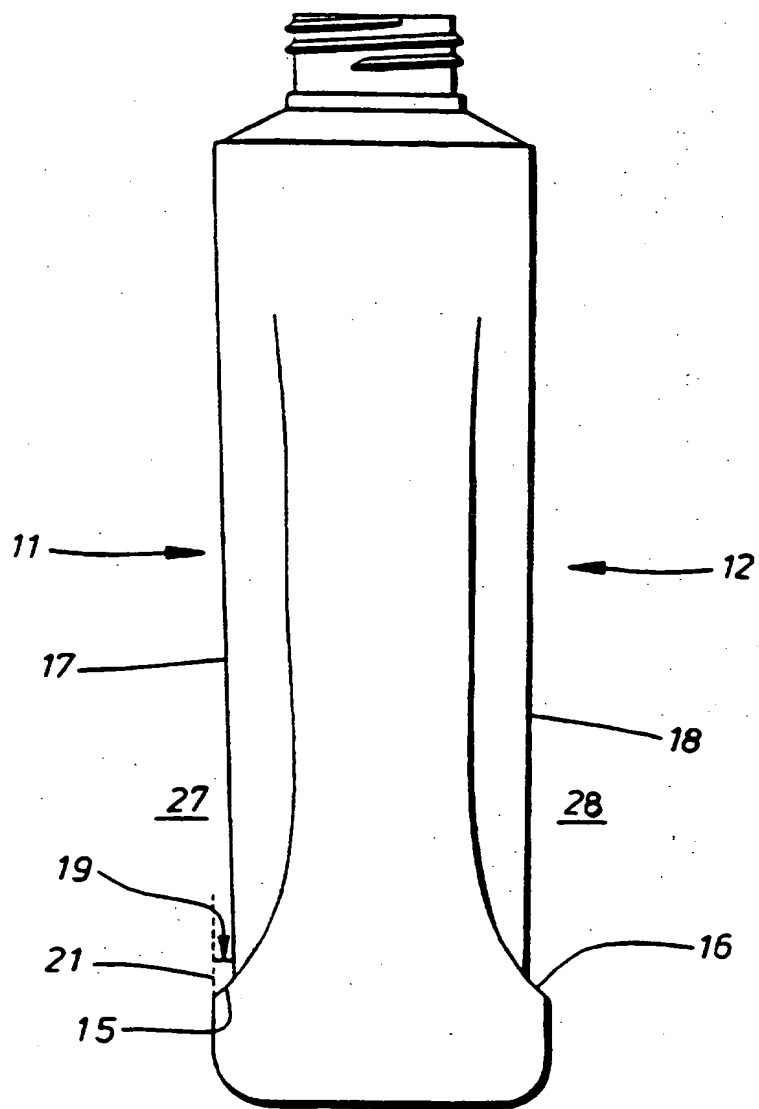


FIG. 1B

3/19

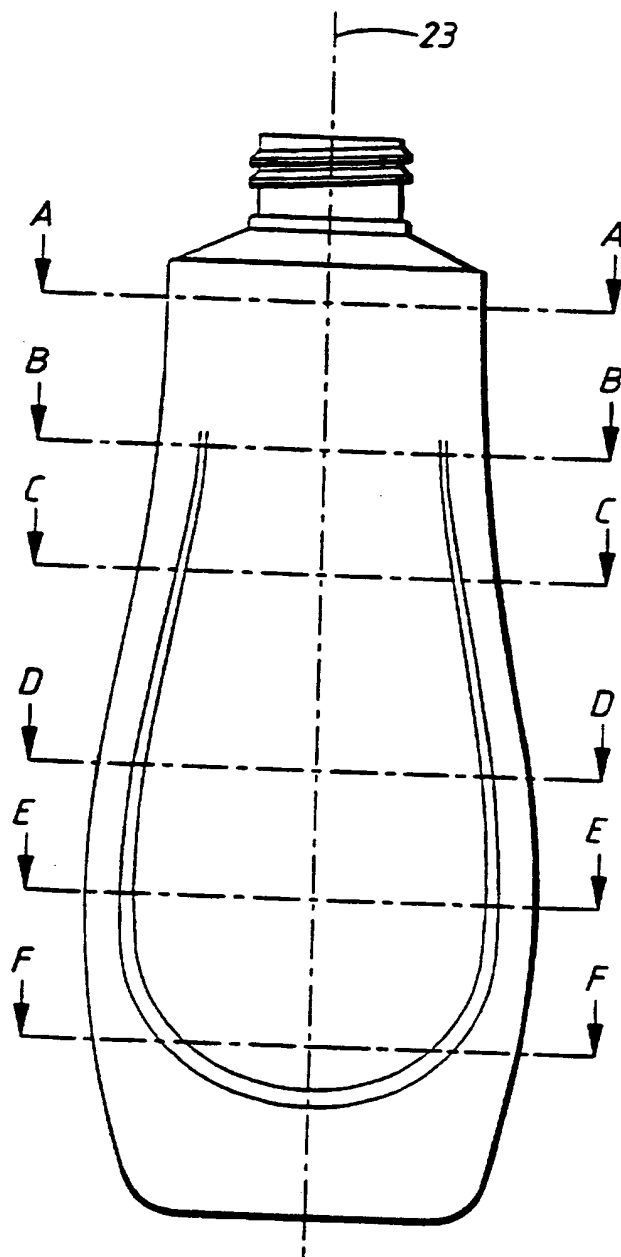


FIG. 1C

FIG. 2A

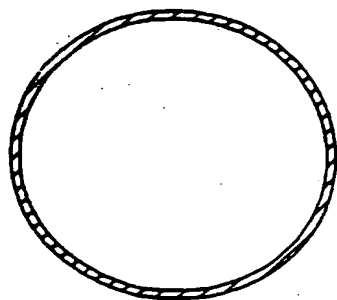


FIG. 2D

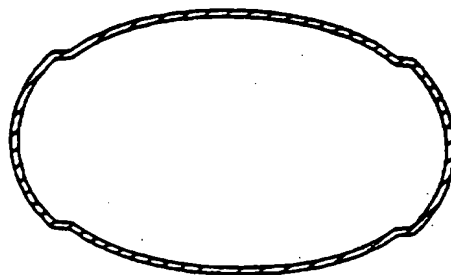


FIG. 2B

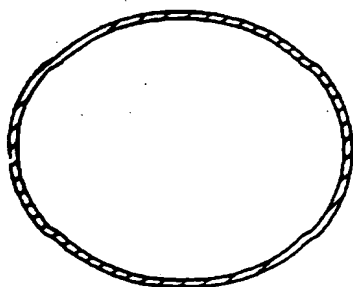


FIG. 2E

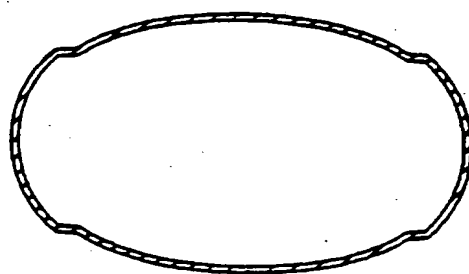


FIG. 2C

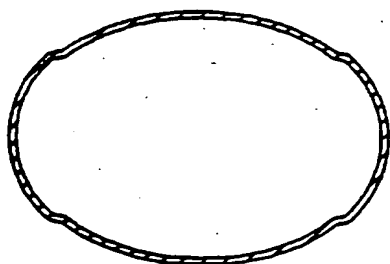


FIG. 2F

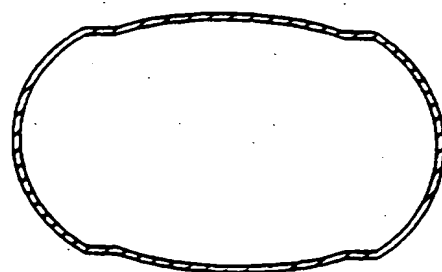


FIG. 3B

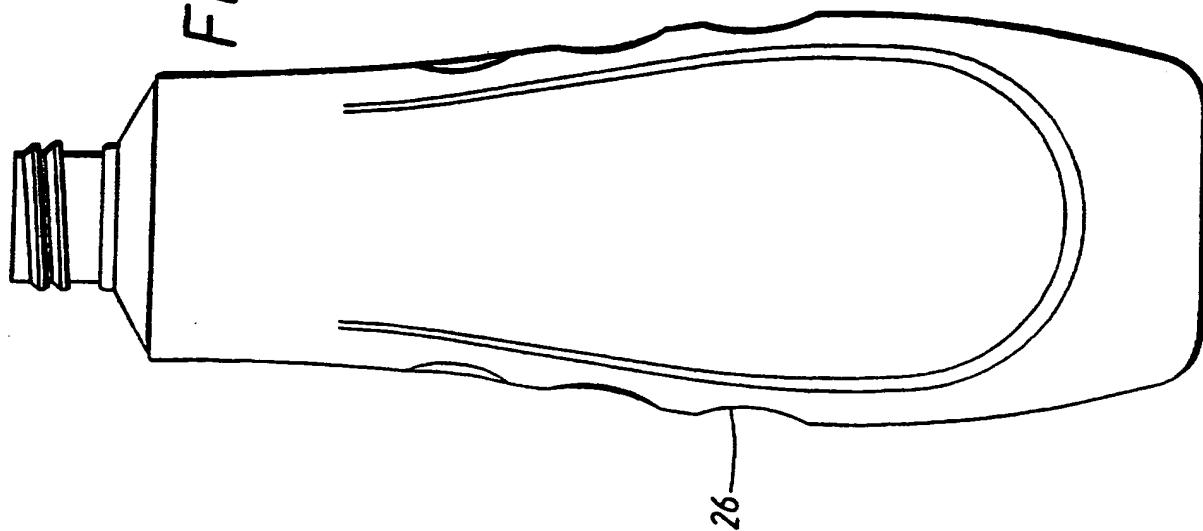
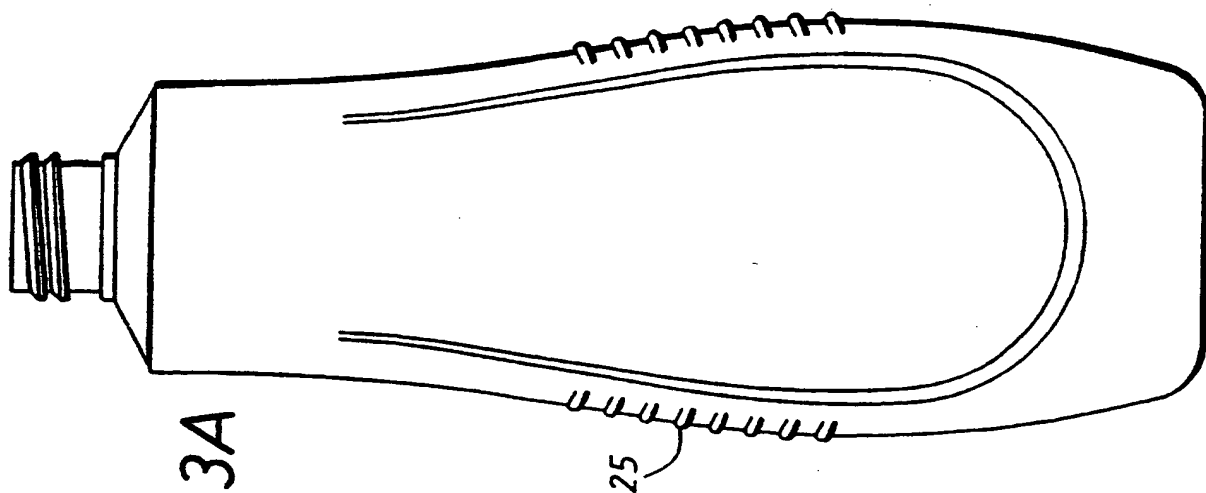
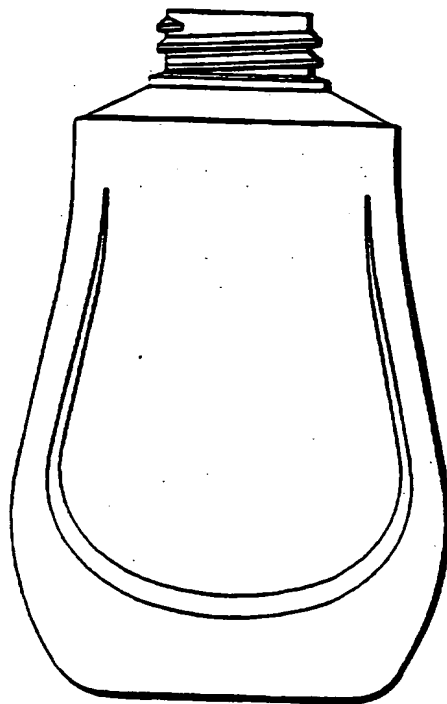


FIG. 3A



6/19

FIG. 4



7/19

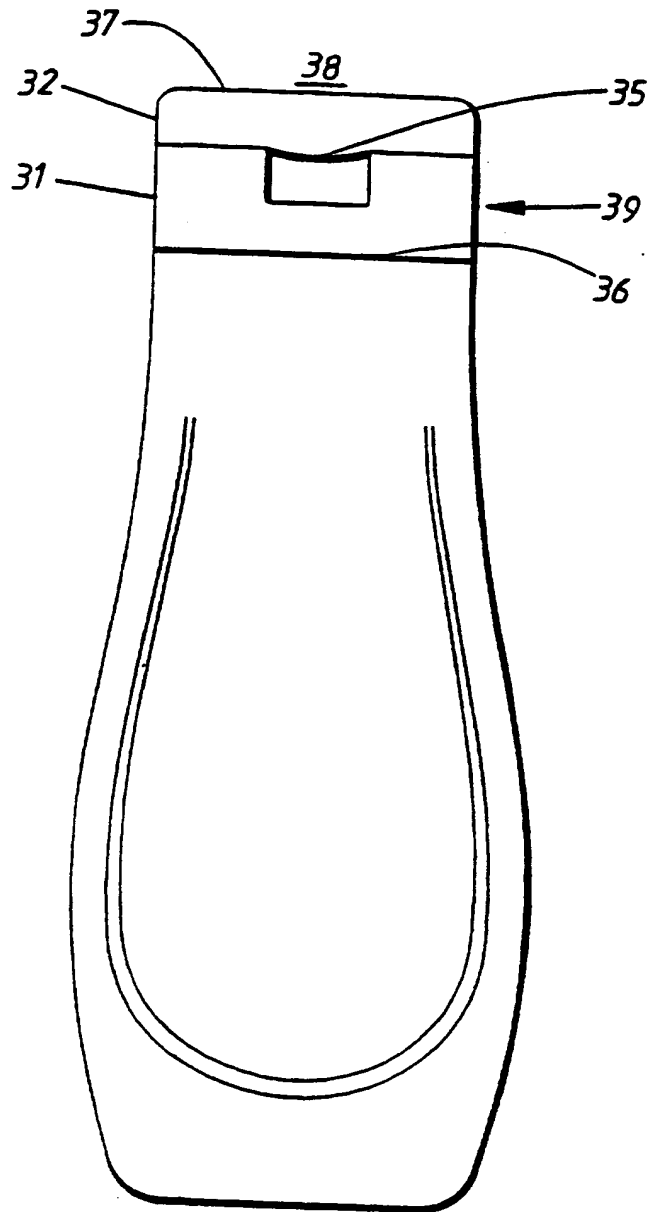


FIG. 5A



8/19

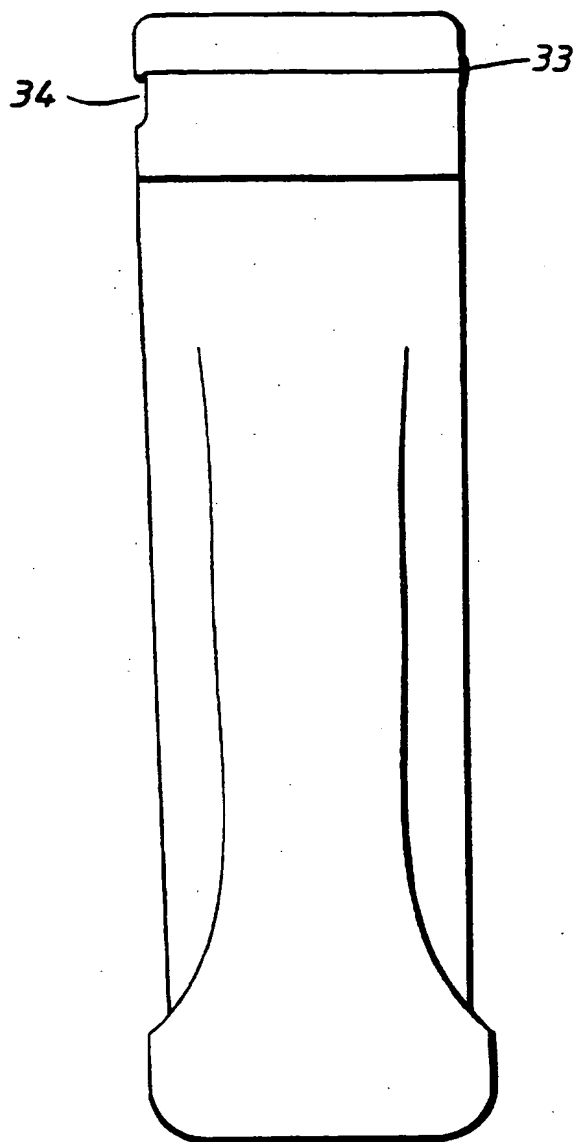


FIG. 5B

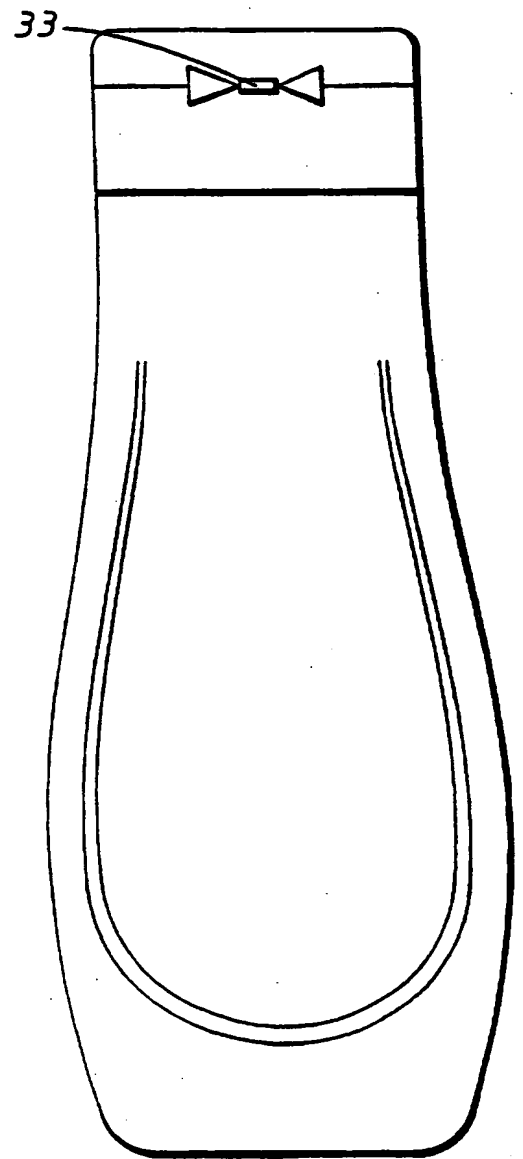


FIG. 5C

9/19

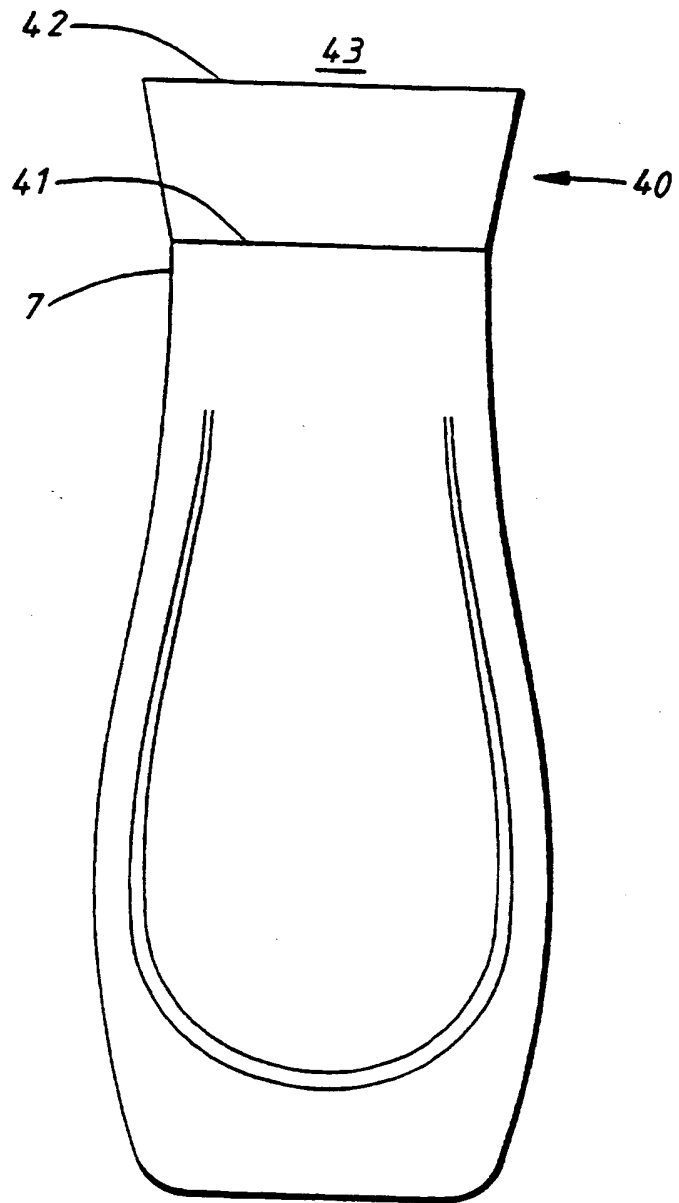
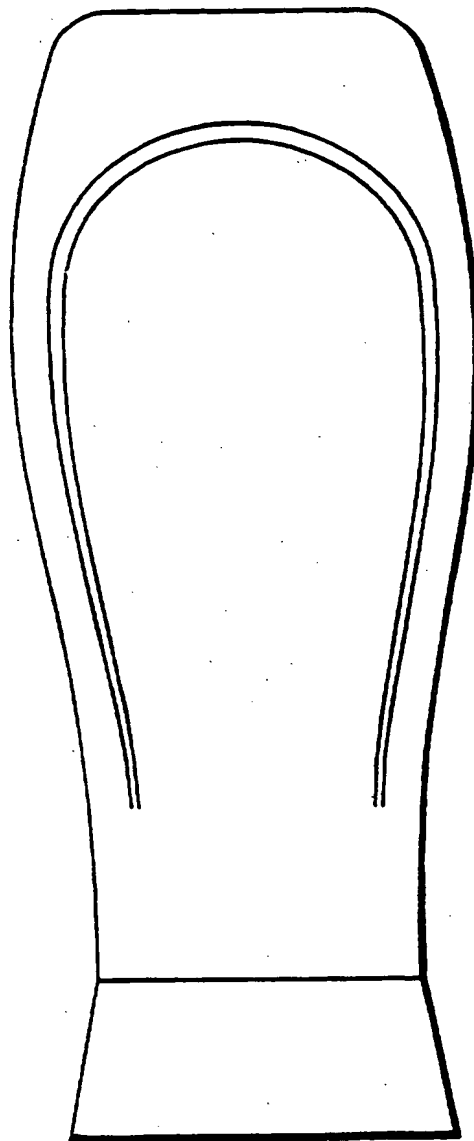


FIG. 6A

10/19



*FIG. 6B*

11/19

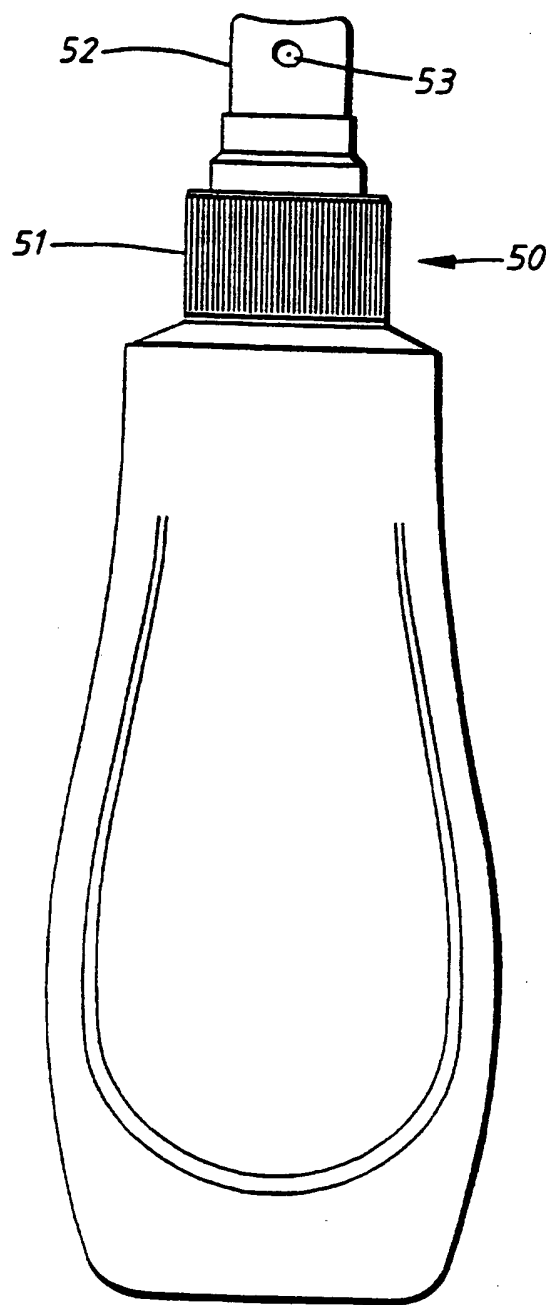


FIG. 7

FIG. 9

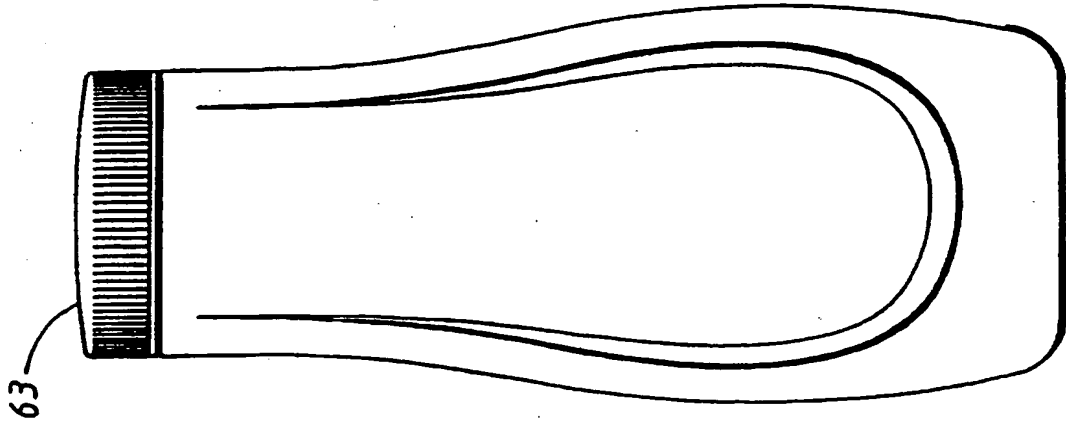
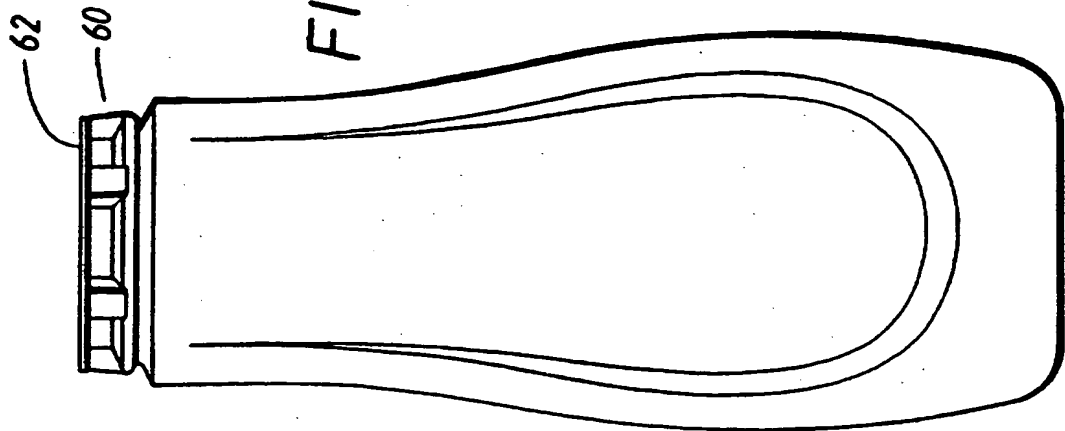


FIG. 8



13/19

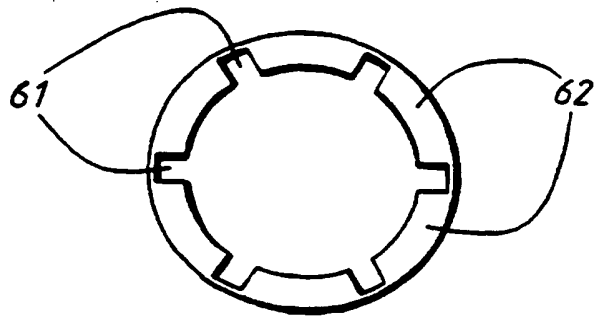


FIG. 10A

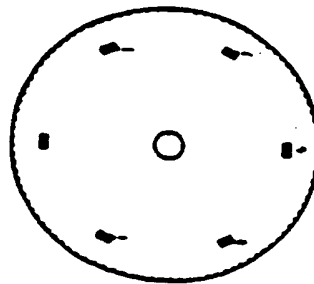


FIG. 10B

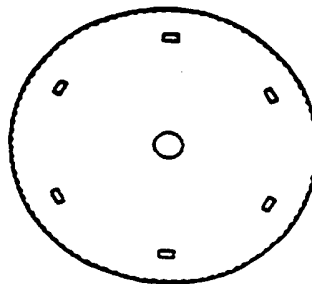
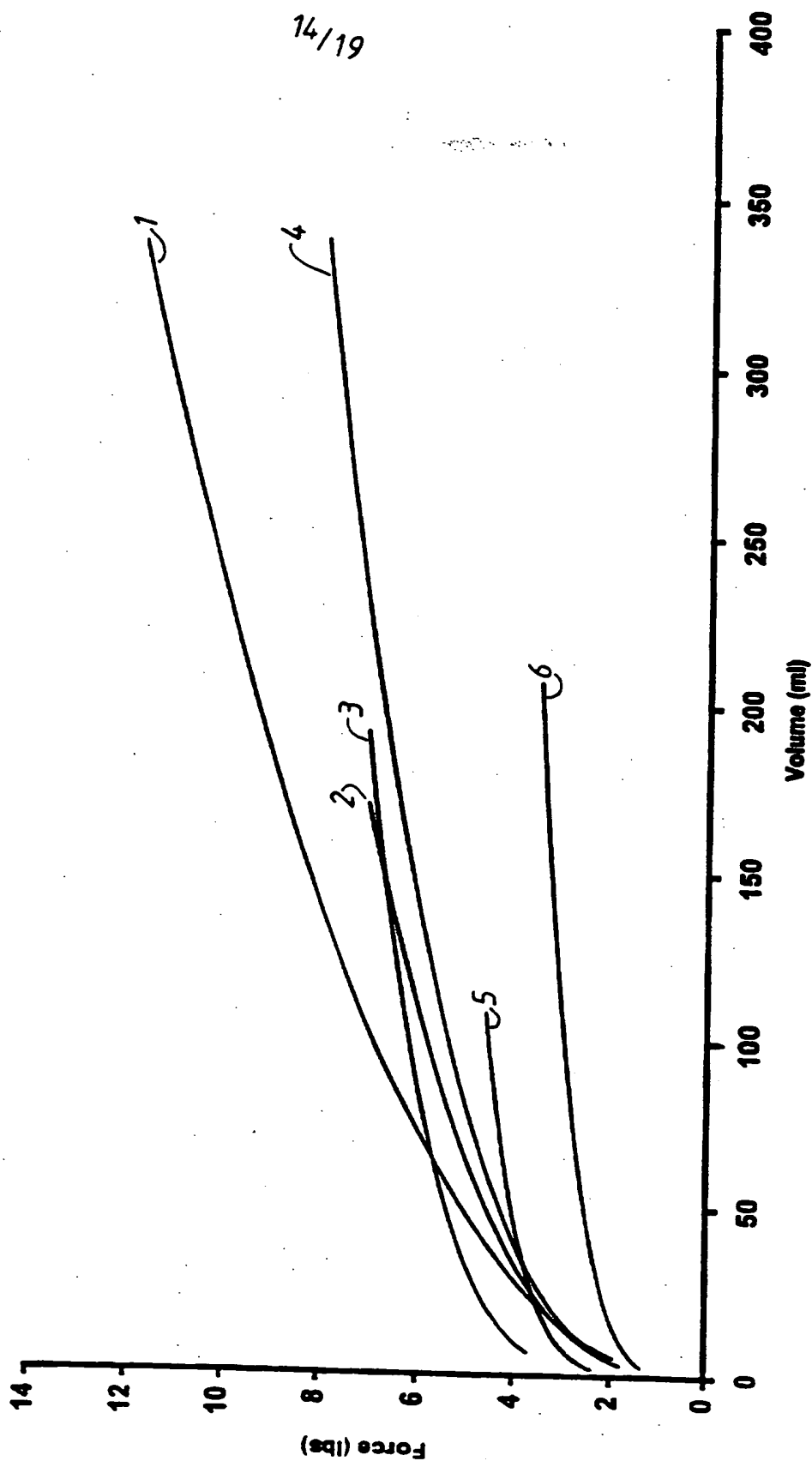


FIG. 10C

FIG. 11



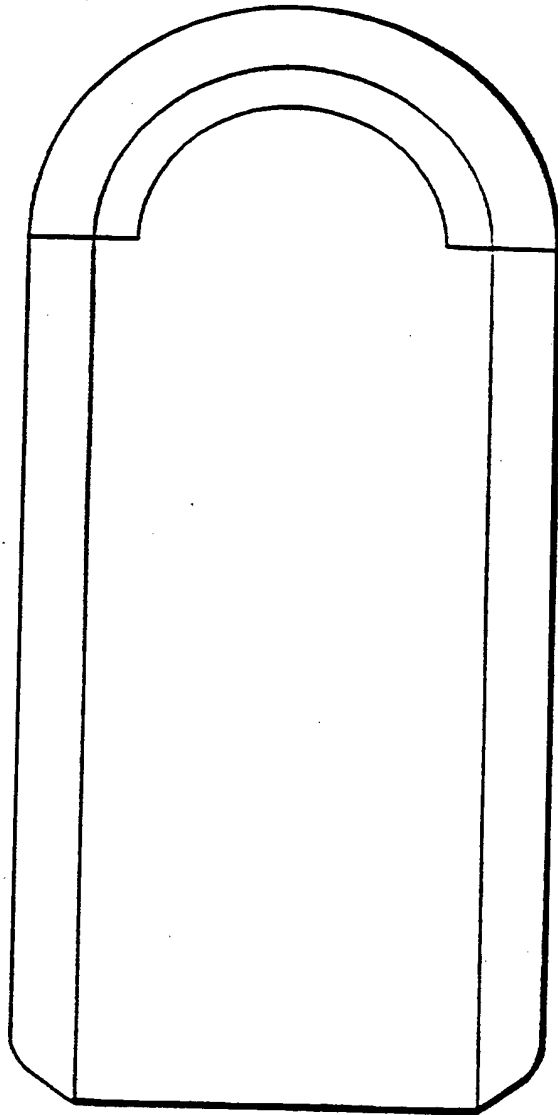


FIG. 12A

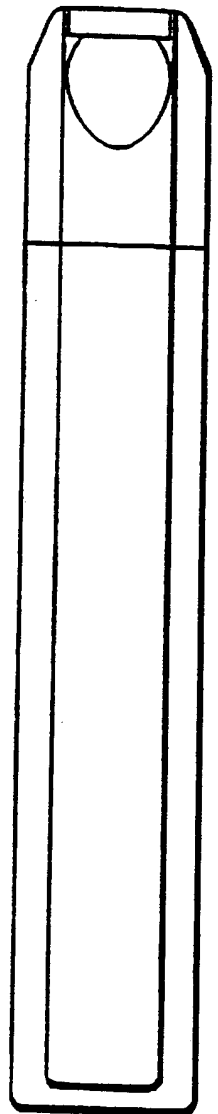


FIG. 12B



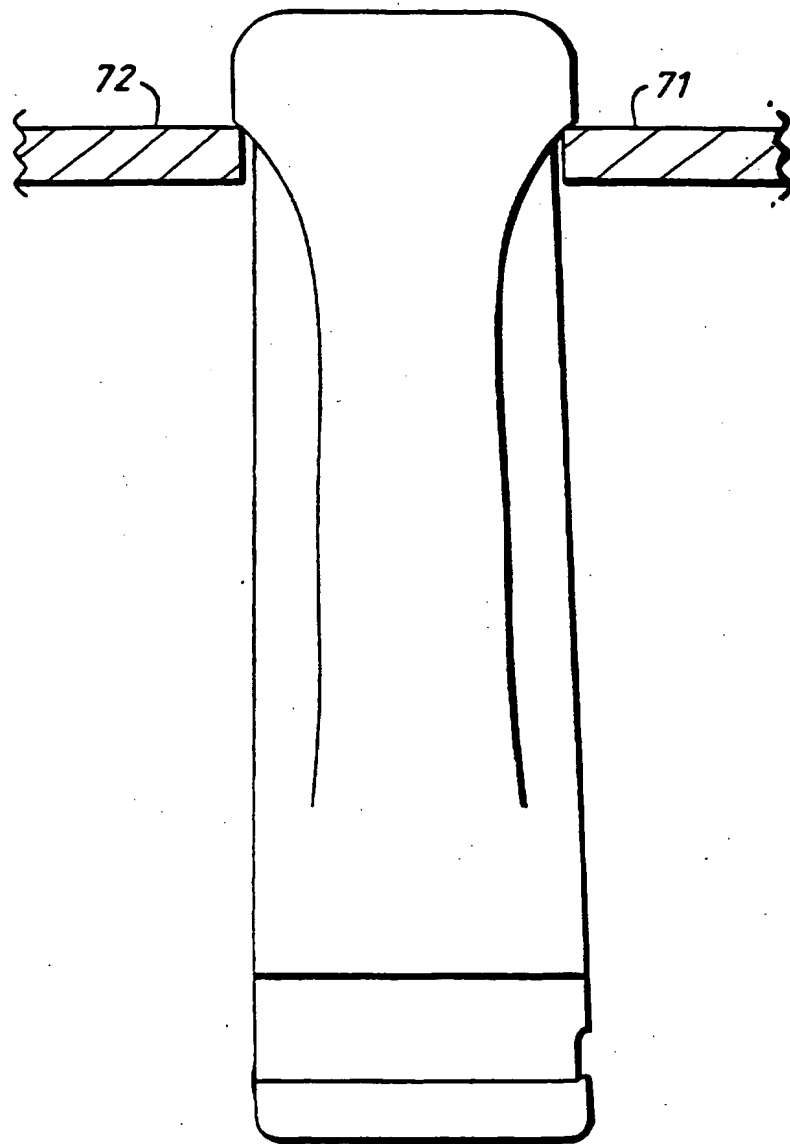


FIG. 13

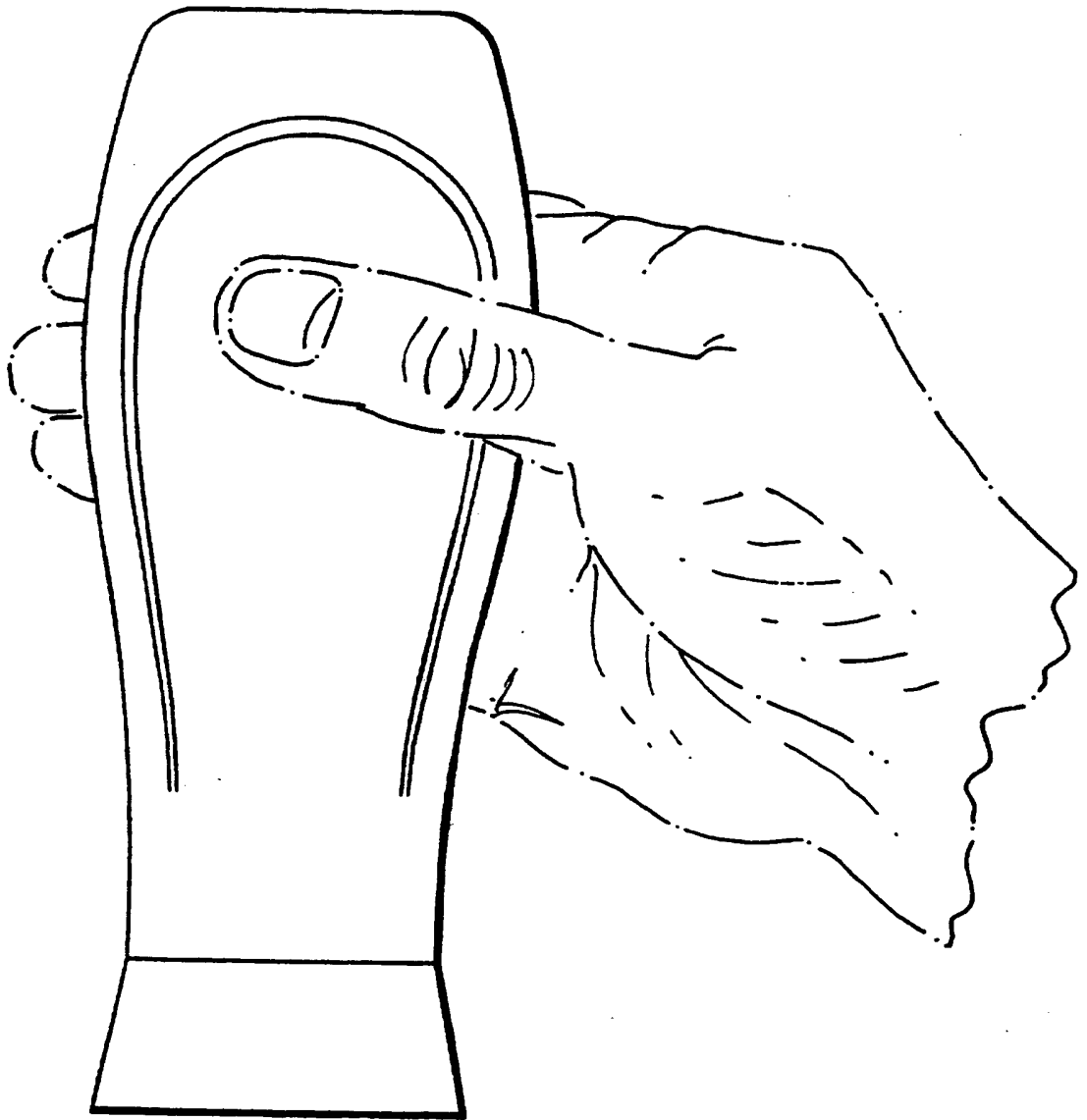


FIG. 14

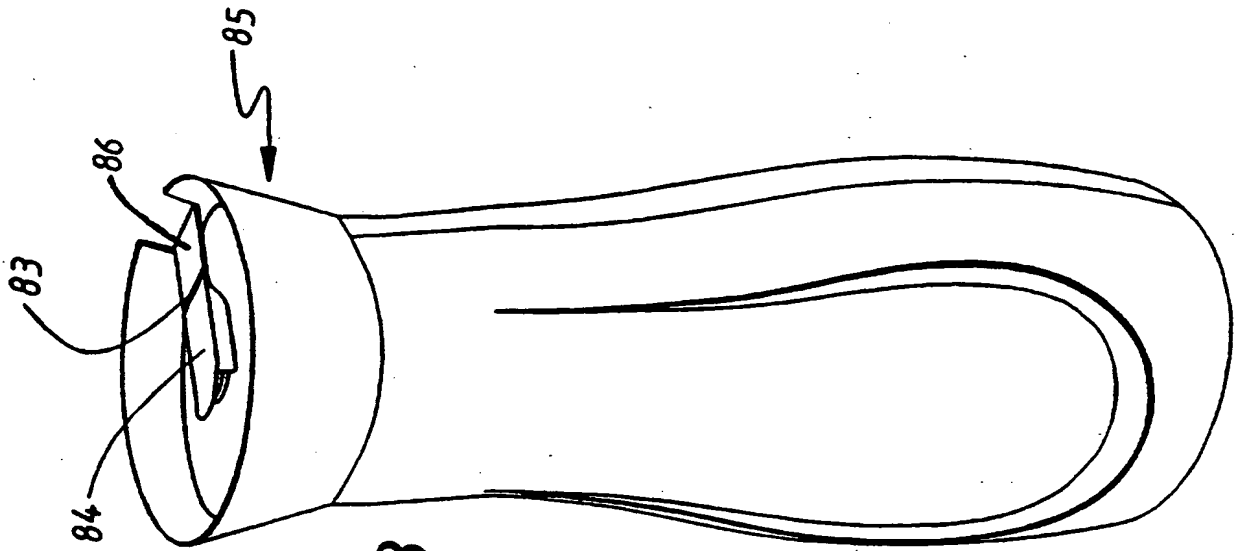


FIG. 15B

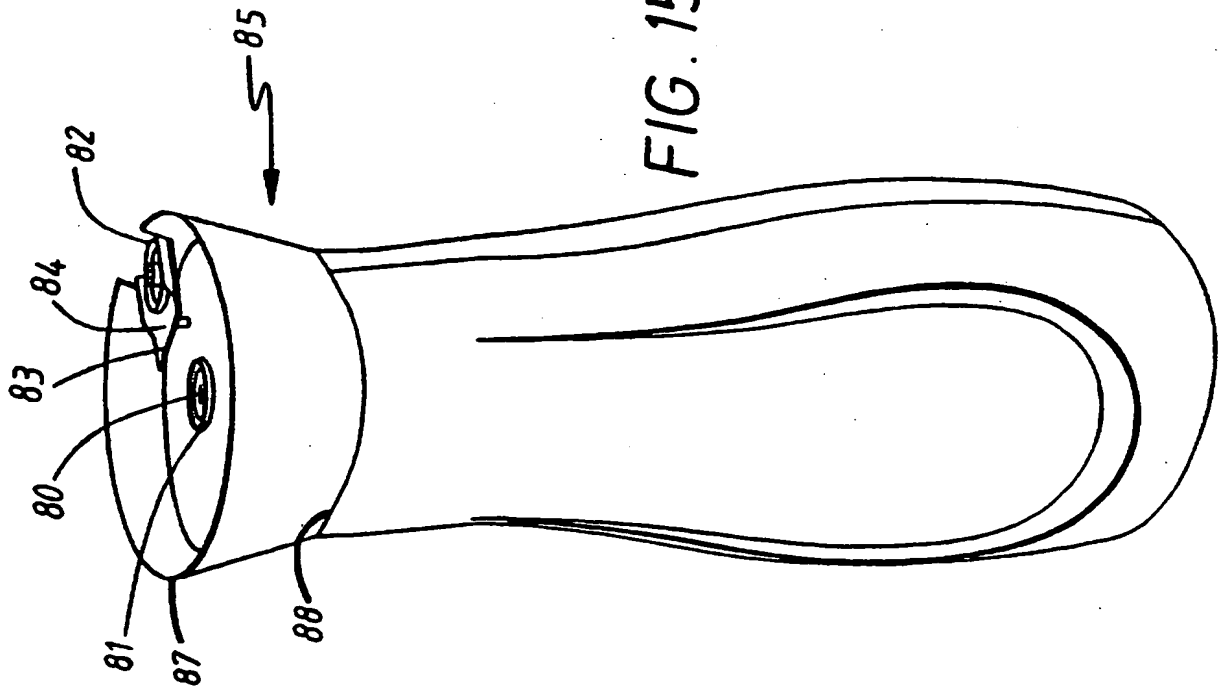


FIG. 15A

FIG. 16A

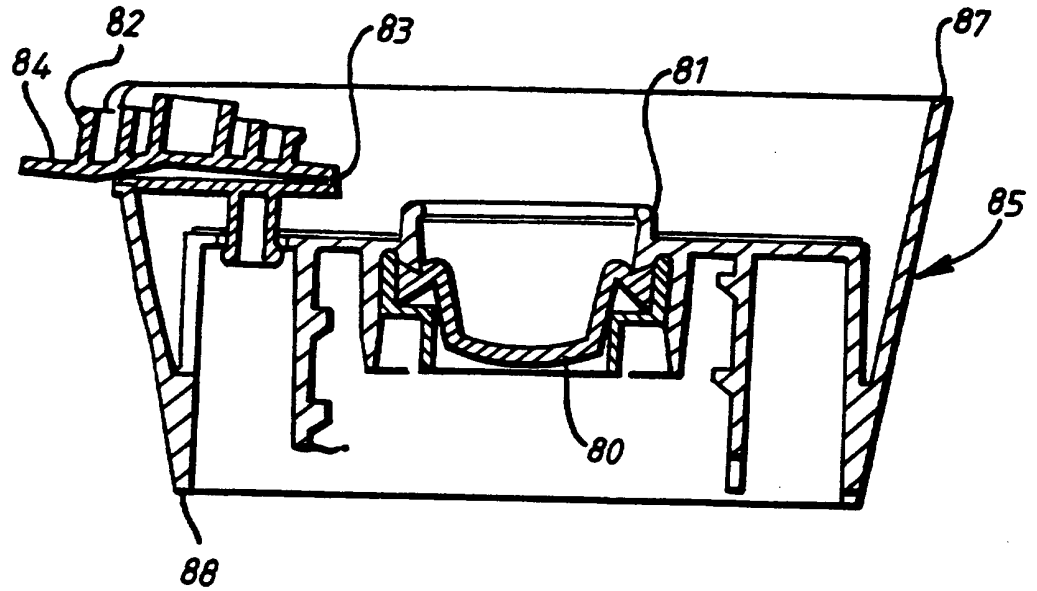
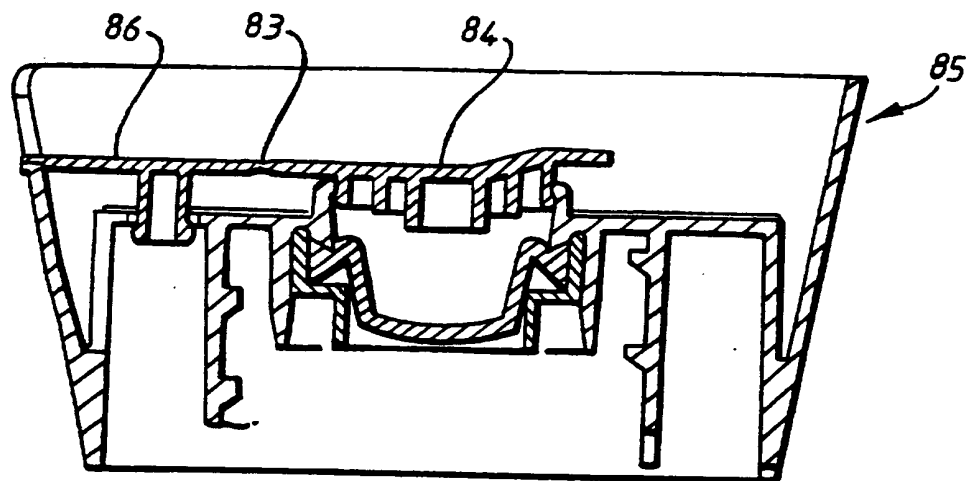


FIG. 16B



5

## DISPENSING CONTAINER

### **Field of the Invention**

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This invention relates to the field of dispensing containers. More particularly, this invention relates to containers having an improved shape which are suitable for use for adults and children.

### **Background of the Invention**

15

The vast majority of dispensing containers in use today are sized to be used by adults. Young children have much smaller hand sizes, and accordingly, it is difficult for them to handle and effectively dispense product from containers that were designed to be used by adults. Conversely, it would be difficult for an adult to use a dispensing container that was specifically designed for use by small children.

20

Another related problem with conventional containers is that they are designed for dispensing products by adults. i.e., the amount of force required to express product from the container is commensurate with the strength of the adult hand. Children and the elderly, being weaker than most adults, have less force available to dispense products. Therefore, it would be desirable for a container to have a low required dispensing force in order for the container to be preferred by those lacking great hand strength.

25

In conventional packaging for toiletries, products are often packaged for storage in an upright orientation, i.e., in which the closed end of the container is oriented below its open end, as when the container is

5 positioned when being filled with product to be contained therein. While  
such products are frequently stored in an upright configuration, product is  
often dispensed from the container in an inverted orientation. Containers  
typically have a certain hold-up, i.e., a volume of product that is not  
conveniently dispensed because of contact with the container walls. The  
10 amount of hold-up is accentuated in containers in which the product is  
stored in one orientation and used in the opposite orientation. This problem  
is further accentuated in the case of viscous products such as shampoo.

Another problem with conventional containers is that they may slip  
from the hands, particularly when the hands are wet. This is especially a  
15 problem for toiletry containers that are typically used in the bath by small  
children, such as shampoo and body wash products.

It is, accordingly, an object of the invention to provide a dispensing  
container that is designed to fit comfortably in the hands of both small  
children as well as adults.

20 It is yet another object of the present invention to provide a container  
that requires minimum force to dispense products therefrom so as to be  
preferred for use by those lacking great hand strength.

It is a further object of the invention to provide containers with design  
features that prevent the container from slipping from the users' hands,  
25 particularly when their hands are wet.

It is another object of the present invention to provide a container  
which is stable for storage in an inverted configuration so as to minimize the  
hold-up of the contents of the container, particularly when used for the  
storage of viscous liquid products.

5

It is yet another object of the invention to provide a container which is ergonomically effective for use by children and adults while containing surfaces which facilitate labeling of the container.

### **Summary of the Invention**

10

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In accordance with this invention, there is provided a dispensing container which comprises, consists of, and/or consists essentially of an open end, a closed end, and a body. The body has a front, a rear, a first side and a second side, an upper portion adjacent the open end, a lower portion adjacent the closed end and a central portion intermediate the upper and lower portions. The dispensing container of the invention further comprises a first recess on the front of the body and a second recess on the rear of the body, the recesses being adjacent the closed end and sides of the container. The first recess defines a first panel on the front of the container and the second recess defines a second panel on the rear of the container. The container further comprises a neck which defines an opening in the container, the neck having a finish suitable for accommodating a closure.

25

Another aspect of the invention relates to a dispensing container which comprises, consists of, and/or consists essentially of an open end, a closed end, and a body. The body has a front, a rear, a first side and a second side, an upper portion adjacent the open end, a lower portion adjacent the closed end and a central portion intermediate the upper and lower portions. The dispensing container of the invention further comprises a first recess on the front of the body and a second recess on the rear of the body, the recesses being adjacent the closed end and sides of the

5 container. The first recess defines a first panel on the front of the container and the second recess defines a second panel on the rear of the container. The container further comprises a neck which defines an opening in the container, the neck having a finish suitable for accommodating a closure. The container further comprises a closure.

10 Yet another aspect of the invention relates to a container adapted for the dispensing of liquids. The container, comprising a resilient polymeric material, further comprises, consists of, and/or consists essentially of:

- 15 a. an open end, a closed end, and a body, the body having a front, a rear, a first side and a second side, an upper portion adjacent the open end, a lower portion adjacent the closed end and a central portion intermediate the upper and lower portions;
- b. a first recess on the front of the body and a second recess on the rear of the body, the recesses being adjacent the closed end and sides. The first recess defines a first panel on the front of the  
20 container and the second recess defines a second panel on the rear of the container;
- c. a neck defining an opening in the container. The neck has a finish suitable for accommodating a closure;
- d. a closure adapted for dispensing liquids; wherein:
  - 25 1. the upper body portion is substantially circular in cross-section and has a circumference of between about 4.7 and about 6.0 inches;
  2. the upper body portion has a length of at least about 0.2



5

inches;

10

3. the central body portion is substantially oval in cross-section and increases in circumference from the upper body portion to the lower body portion;
4. the lower body portion is substantially oval in cross-section and decreases in circumference from the central body portion to the closed end; and
5. the panels have a major dimension in the direction from the open end to the closed end of the container and a minor dimension from the first side to the second side of the container, the panels being curved in the minor dimension and substantially straight in the major direction.

15

The container of this invention possesses one or more beneficial characteristics. Not only is the container designed to fit comfortably in the hands of both children and adults, but it also requires only a minimum amount of force to dispense products therefrom. Further, the containers are of a design which prevents slippage from the hands of the user, which minimizes hold-up of the contents contained therein, and which contains surfaces that facilitate labeling.

20

#### **Brief Description of the Drawings**

25

The invention will be more fully understood and further advantages will become apparent when reference is made to the following detailed description of the invention and the accompanying drawings in which:

FIG. 1A is a front plan view of a preferred structure of the container of this

5 invention.

FIG. 1B is a side plan view of the container of FIG. 1A.

FIG. 1C is a front plan view of the container of FIG. 1A showing section lines A-A through F-F.

10 FIG. 2A through FIG. 2F are cross-sectional views of the container of FIG. 1C at section lines A-A through F-F, respectively.

FIG. 3A and FIG. 3B are front plan views of containers of this invention having finger gripping means.

FIG. 4 is an alternate embodiment of the container of FIG. 1A.

15 FIG. 5A, FIG. 5B and FIG. 5C are front, side and rear plan views, respectively, of the container of FIG. 1A fitted with a liquid dispensing closure.

FIG. 6A is a front plan view of the container of FIG. 1A fitted with an alternate liquid closure.

20 FIG. 6B is a front plan view of the container of FIG. 6A in an inverted orientation.

FIG. 7 is a front plan view of the container of FIG. 1A fitted with a closure containing an aerosol pump dispenser.

FIG. 8 is a front plan view of another example of the container of the invention with a neck finish adapted for dispensing powders.

25 FIG. 9 is the container of FIG. 8 fitted with a closure.

FIG. 10A is a top plan view of the neck finish of the container of FIG. 8.

5        **FIG. 10B and FIG. 10C are top plan views of the closure of the container of FIG. 9 showing the closure in the open and closed position, respectively.**

**FIG. 11 is a graph of the force (lbs) required to discharge liquid from a valved container of this invention versus the volume (ml) of liquid discharged.**

10        **Fig. 12A and Fig. 12B are front and side views, respectively of a container used for packaging of commercially available childrens' toiletries.**

**Figure 13 shows a side view of the container of the invention in an inverted position supported by supports positioned in the recesses of the container but not in contact with the panels of the container.**

15        **Figure 14 shows a hand-held container of the invention held in position for dispensing product from the container.**

**Figure 15A shows another embodiment of the container of the invention with a closure container a valve and a lid in the open position.**

20        **Figure 15B shows the container of Figure 15B with the lid in the closed position.**

**Figure 16A and Figure 16B show the closure of the container of Figure 15A and Figure 15B in cross-section with the lid in the open and closed positions, respectively.**

#### **Detailed Description of the Preferred Embodiments**

25        **As used herein, the term "upright orientation" shall mean that the closed end of the container is below the open end of the container, as when the container is positioned when being filled with product to be contained**

5           therein. Conversely, the term "inverted orientation" shall mean that the  
closed end of the container is positioned above the open end. Similarly, the  
term "sideways orientation" shall mean that the container is in an orientation  
that is intermediate the upright and inverted orientations. This orientation  
description is merely used for convenience in describing the orientation of  
10       the container and is not meant to imply the orientation of the container  
during storage and dispensing of products therefrom. As will be described  
subsequently, various embodiments of the containers of the invention may  
be used in either an upright or an inverted orientation.

15           The basic form of the invention is shown by the container in an  
upright orientation in FIGS. 1A, 1B and 1C, which is generally designated 6.  
The container 6 contains an open end 1 and a closed end 2. The closed  
end 2 of the container 6 preferably has a surface 21 that permits the  
container 6 to remain standing when placed on a flat surface in an upright  
orientation. The open end 1 of the container 6 contains a neck 3 which  
20       defines an opening 20 in the container. The neck contains a neck finish 4  
adapted to mate with a closure (not shown) for the container. The neck  
finish shown in FIGS. 1A and 1B is a threaded finish, although any of the  
other finishes known in the art may be used with the containers of the  
invention. By way of example, other suitable finishes include, but are not  
25       limited to, a press-fit finish, a snap-on finish, a snap and turn finish or an  
oriented thread finish as disclosed in, for example, The Wiley Encyclopedia  
of Packaging Technology, John Wiley and Sons, New York, 1986.

          The open end 1 of the container 6 further comprises a shoulder 5  
which connects the neck 3 to the body 22 of the container. The body 22 of

5 the container contains an upper body portion 7 adjacent the open end 1  
which is preferably cylindrical in cross-section. The upper body portion 7 of  
the container 6 preferably has a circumference, as measured normal to the  
longitudinal axis 23 of the container 6, which may range from about 4.7  
10 inches, to about 6.0 inches, more preferably from about 5.0 inches to about  
5.7 inches, and most preferably, from about 5.2 inches to about 5.7 inches.  
The upper body portion 7 preferably has a substantially constant  
circumference for a length down the longitudinal axis of the container 6 of at  
least about 0.2 inches.

15 As illustrated in FIG. 1A, the upper body portion 7 transitions to a  
central body portion 8, which is located below and proximate to the upper  
body portion 7 along the longitudinal axis 23. In transitioning from the upper  
body portion 7 to the central body portion 8, the container 6 continually  
increases in circumference and begins to assume more of a generally oval  
or elliptical cross-sectional shape. Proceeding down the longitudinal axis of  
20 the container 6, the circumference of the container continues to increase  
until the region of maximum circumference 9, after which preferably the  
circumference of the container 6 continually decreases. The region of  
maximum circumference marks the transition from the central body portion 8  
to the lower body portion 10 of the container 6 adjacent its closed end 2.

25 While the longitudinal length of the upper body portion 7, the central  
body portion 8, and the lower body portion 10 may vary depending upon the  
desired use of the container 6, the ratio of the lengths of the central body  
portion to the upper body portion preferably ranges from about 1.2 : 1 to  
about 6 : 1, and more preferably ranges from about 1.75 : 1 to about 5 : 1.

5       The ratio of the lower body portion to the upper body portion preferably ranges from about 1 : 1 to about 3 : 1, and more preferably, from about 1.2 : 1 to about 2.5 : 1.

10       The variation of the cross-sectional shape and circumference of the container 6 along its longitudinal length is depicted in FIGS. 2A through 2F. Each of these Figures depicts the approximate cross-sectional shapes of the container 6 along section lines A-A through F-F, respectively, illustrated in FIG. 1C. We have unexpectedly found that the variation in circumference of the container along the longitudinal axis of the upper body portion 7 permits the same container that is ergonomically advantageous for use by  
15       small children to be comfortably held and used by larger children and adults.

20       As shown in FIGS. 1A and 1B, the body portion 22 of the container 6 comprises a front 11, a rear 12, a first side 13 and a second side 14. The front 11 of the container contains a first recess 15 and the rear of the container contains a second recess 16. The recesses are adjacent the closed end 2, the first side 13 and the second side 14 of the container 6. The first recess 15 and the second recess 16 define a first panel 17 and a second panel 18 on the front and rear of the container, respectively. Each of the recesses has a depth 19, as shown in FIG. 1B. The depth of the  
25       recess 15, for example, is the distance, perpendicular to the longitudinal axis, from a projection line 21 projected from the closed end 2 of the container 6 to the panel 17 of the container. As shown in FIG. 13, the recesses have a depth sufficient to permit the container 6 to be held by a first support 71 positioned tangentially in the recess 15 on the front 11 of the

5 container 6 and a second support 72 positioned in the recess 16 on the rear  
12 of the container 6 when the container is in an inverted orientation; the  
supports do not actually contact the panels of the container. We have  
surprisingly found that the depth of these recesses is effective in providing  
10 an anti-slip feature to the container when the container is being handled in  
either an inverted or sideways orientation, particularly when the container is  
wet, as it might be when used to contain and dispense cleansing toiletries  
such as body cleansers and shampoos that are used in the shower or in the  
bath.

15 The depth of the recess may be of any thickness desired and may  
depend on, for example, the desired end use of the container and the  
contents stored therein. The depth of the recess is preferably varied at  
different locations on the container, and more preferably is at its deepest  
proximate to the closed end 2 of the container and gradually reduces in the  
longitudinal direction towards the open end 2 and proximate to the first side  
20 13 and the second side 14. Preferably the depth of the recesses ranges  
from about 2.0 mm to about 3.4 mm, and more preferably from about 2.5 mm  
to about 2.9 mm. While such depths are preferred as providing a container  
having effective anti-slip properties, it is to be understood that other recess  
depths may be produced to satisfy a particular need and yet fall within the  
25 scope of the present invention.

In a preferred embodiment, the recesses are not adjacent the open  
end of the container and thus render a "U - shaped" exterior frame to the  
panels. Absence of a recess near the open end 1 permits users of the  
container to freely slide their hands over substantially the entire length of

5 the first and second panels from the bottom of the panels nearest the closed end 2 of the container to the open end 1 of the container to seek out that portion of the container which has a circumference most commensurate with the user's hand size.

10 The dimensions and structural features of the containers of the invention enumerated above are believed to permit the containers of the invention to be easily gripped and handled by both adults and young children in an ergonomically preferable manner. As will be discussed subsequently, these dimensions and features are believed to account for the perceived preference of consumers in terms of handleability of the  
15 containers of the invention relative to prior art containers.

As illustrated in FIGS. 1A and 1B, the panels 17 and 18 are recessed relative to the sides 13, 14, and closed end 2 of the container. Although the size, shape and geometry of the panels may vary depending upon the desired end use of the container, it is preferably that the first panel 17 and  
20 second panel 18 are identical in size, shape and geometry. The panels have a major dimension in the direction from the open end 1 to the closed end 2 of the container, i.e., in a direction generally parallel to the longitudinal axis 23 of the container, and a minor dimension in the direction from the first side to the second side of the container, i.e., generally normal to the longitudinal axis 23. The length of the panel is defined as the  
25 distance from that point of the recess 15 closest to the bottom of the container 24, i.e., point 30, to the top 29 of the upper body portion 7 of the container.

The panels 17, 18 have surfaces 27 and 28 that may either be



5 substantially flat or curved. If the panel surfaces are curved, it is preferred  
that the curve extends in only a single dimension and is substantially  
straight in the other dimension. For example, the container of the invention  
depicted in FIGS. 1A and 1B have panels 17, 18 that are curved in their  
minor dimension but are substantially straight in their major dimension.  
10 More preferably, the panels are substantially straight in their major  
dimension for a distance, based upon the longitudinal length of the panel, of  
at least about 50 percent of their longitudinal length, and even more  
preferably for a distance of at least about 65 percent of their longitudinal  
length. We have found that this panel geometry is especially favorable to  
15 permit labeling or decorating the container in its panel sections by either  
printing or by adhering of an adhesive-backed label to the container. In the  
case of printing, absence of curvature in two dimensions over a substantial  
portion of the panel permits firm contact of a print roll to that portion of the  
panel. Likewise, in the case of adhesive labeling, absence of curvature in  
20 two dimensions over a substantial portion of the panel permits adhering an  
adhesive label to the panel without wrinkling the label.

FIGS. 3A and 3B show alternate embodiments of the containers of  
the invention in which the containers have optional raised lateral protrusions  
25 or depressions 26 in their sides in order to provide means for enhancing  
the grip of a user's fingers around the container. Alternatively, the  
containers of the invention may contain a combination of both protrusions  
and depressions. Although FIGS. 3A and 3B illustrate only lateral,  
protrusions and circular depressions, one skilled in the art will appreciate  
that the container of the present invention may possess protrusions,  
30 depressions, and or other grip-enhancing means such as rubber or

5 polymeric sections molded or adhered to the container, of any shape, size and amount in order to enhance the user's grip of the container.

FIG. 4 shows an alternate embodiment of the container of FIGS. 1A and 1B, wherein the contained volume of the container of FIG. 4 is about one half of the contained volume of the container of FIGS. 1A and 1B.

10 In another embodiment of the present invention, the container 6 of the present invention is fitted with a closure 39 to contain and dispense the products contained therein. One skilled in the art would readily appreciate that the type of closure suitable for use in the present invention would depend upon various factors, such as the form of the product in the  
15 container, the desired form in which the product is to be dispensed, and the degree of convenience to be provided to the consumer.

Any of the closures known in the art may be used with the containers of the present invention, including but not limited to those disclosed in The Wiley Encyclopedia of Packaging Technology, John Wiley and Sons, New  
20 York, 1986.

In the case of containers used for the storage and dispensing of liquids, the simplest form of closure would be a conventional cap of one piece construction which must be removed from the container in order to dispense product therefrom; however, the use of a closure which need not  
25 be removed from the container in order to dispense product therefrom is preferred.

An example of a container 6 fitted with a closure 39 for dispensing liquid products is illustrated in FIGS. 5A, 5B and 5C, which depicts the container of FIGS. 1A and 1B fitted with a commercial hinged closure.

5 Other suitable closures include those well-known in the art including, but not limited to: 1) those containing a lid and body in which the lid is completely removable from the body of the closure; 2) those having a lid that is slidably connected to the body of the closure; 3) those not having a lid such as the push-pull type and the flip-spout type of closures, as disclosed in, for  
10 example The Wiley Encyclopedia of Packaging Technology, John Wiley and Sons, New York, 1986.

Closure 39 comprises a body portion 31 and a lid portion 32 hingedly connected to the body portion via hinge 33. Body portion 31 contains an orifice (not shown) through which product may be dispensed. Lid portion 32  
15 contains a pin on its underside (not shown) which is sized to fit tightly into the orifice of body portion 31. When the lid portion 32 is in its closed position, the pin contacts the body portion 31 so as to seal the container and thus prevent dispensing of its contents. Body portion 31 may contain an optional recess 34 in order to permit easy opening of the closure by  
20 positioning a finger in the recess 34 under a portion of the lid 35 and subsequently applying force to the underside of the lid.

Closure 39 has a base 36 adjacent the upper body portion of the container and a top 37 remote from the base 36. Closure 39 has a substantially uniform circular circumference from its base 36 to its top 37  
25 which is substantially equal to the circumference of the upper body portion of the container.

Another novel feature of the present invention is illustrated in FIGS. 5A - 5C. Closure 39 preferably has a top surface 38 which permits storage of the container in an inverted orientation. As the contents of the container

5 are depleted, storage of the container in the inverted orientation permits the remaining contents of the container to collect at the container's open end rather than at its closed end, thereby permitting the dispensing of substantially the entire contents of the container and virtually eliminating the problem of "hold up" for more viscous contents. Preferably, both the closed  
10 end of the container and the top end of the closure have surfaces that permit the container to be stored in either an upright or inverted orientation.

Another embodiment of the container of the present invention is shown in an upright and inverted orientation in FIGS. 6A and 6B, respectively. The closure 40 has a base 41 adjacent the upper body portion  
15 of the container and a top 42 remote from the base 41. The base 41 has a substantially circular circumference which is substantially equal to the circumference of the upper body portion 7 of the container. The closure 40 is tapered such that the circumference of the closure increases from the base 41 to the top 42 of the closure. The degree of taper may vary  
20 depending upon the desired end use of the container and the desired aesthetic effect. The closure 40 has a top surface 43 which permits the storage of the container in an inverted orientation. The larger circumference at the top of the tapered closure confers added stability to the container when it is stored in an inverted orientation.

25 In another preferred embodiment, the closure used in the containers of the invention may contain a valve as illustrated in FIGS. 15A. Illustrative examples of suitable valves for use in the containers of the invention include, but are not limited to those disclosed in U.S. 5,439,143, U.S. 4,749,108 and U.S. 4,846,810, all of which are incorporated herein in their

5 entirety by reference. Such valves are generally designed to open at  
pressures exceeding a certain threshold pressure, thereby allowing product  
to be released from the container, and to close at pressures below the  
threshold pressure, thereby restraining the release of product from the  
container. The minimum value of the threshold pressure of the valve is  
10 dictated by the need for the valve to contain the contents of the container  
when the container contents exhibit the maximum head pressure, i.e., when  
the container is full. The head pressure of the container contents, in turn,  
depends on the density of the contents and the geometry of the container.  
In practice, the practical minimum threshold pressure is somewhat higher  
15 than the head pressure in order to accommodate slight pressure changes  
that may occur in the container as it is handled when discharge of the  
contents is not desired. The maximum value of the threshold pressure is  
dictated by the need to have the valve open when the container is squeezed  
by its intended users. In the containers of the invention, the valves must be  
20 activatable not only by adults, but also, by children and/or the elderly who  
have relatively weaker hand strength.

With containers made of resilient materials, the application of a  
squeezing force to the outside of the container provides a pressure inside  
the container that exceeds the threshold pressure, thereby permitting  
25 product to be released from the container. Discontinuing or sufficiently  
reducing the squeezing force reduces the pressure inside the container to  
below the threshold pressure, thereby restraining the release of product  
from the container. This feature is particularly important for applications in  
which the container will be frequently used in the inverted orientation.

5                   Figure 15A and Figure 15B show a container of the invention with a  
closure 85 that contains a lid 84 and a valve 80. The lid 84 is hingedly  
connected to extension member 86 via hinge 83. Lid 84 contains a stopper  
82 on its underside that mates with protruding orifice ring 81 of the closure  
85. When in use and in a position ready to dispense product, lid 84 is in the  
10                   retracted position as shown in Figure 15A. In storage and during shipment,  
lid 84 is in the closed position as shown in Figure 15B. When in the closed  
position, stopper 82 on the underside of lid 84 is mated with protruding  
orifice ring 81, thereby preventing inversion of valve 80 and release of  
product therefrom. Closure 85 has a circumference at its bottom 88  
15                   adjacent the upper body portion of the container that is substantially equal  
to the circumference of the upper body portion of the container. Closure 85  
is tapered, the circumference at its top 87 being larger than at its bottom 88.  
The larger circumference at the top 87 of the closure 85 provides added  
stability to the container in storage in the inverted orientation.

20                   Valves may be incorporated into the closures via methods known in  
the art including but not limited to retaining the valve in the closure by  
mechanical means, as, for example, by the use of a retaining ring that snaps  
in place against the body of the closure. Such a closure is described in U.S.  
5,377,877 which is incorporated herein in its entirety by reference.  
25                   Alternatively, the valve and closure may be integrally formed, as, for  
example, by multi-injection or co-injection molding of disparate materials  
comprising the closure and the valve. Methods for co-injection molding are  
described, for example, in U.S. 5,523,045 and in the Modern Plastics  
Encyclopedia, McGraw-Hill, New York, 1990, which are incorporated herein  
30                   in their entirety by reference.

5                   FIG. 6B illustrates the container of FIG. 6A in an inverted orientation. It will be noted that the container exhibits a generally "exclamation-point" shape in the inverted orientation. The container dimensions are such that small children can conveniently and comfortably grip the container near its upper body portion 7, while larger children and adults may comfortably grip  
10 the container at its central body portion 8 or at its lower body portion 10. The container 6 is preferably of a size and shape to permit an adult with average-sized hands to grasp the container at its widest point 9 by holding the rear of the container in the palm of the hand such that the thumb and fingers can contact the sides of the container and at least partially contact  
15 the front of the container.

                  In an alternative embodiment, the containers of the present invention may contain a closure adapted to dispense liquids in the form of sprays or aerosols. An example of an aerosol dispensing container of the invention is shown in FIG. 7, in which the container of FIGS. 1A and 1B is fitted with a  
20 commercial closure 50 containing an aerosol pump. The closure has a knurled collar 51 which facilitates attachment to the container and grasping of the container at least in part at the knurled collar. Product contained therein is dispensed from the container out of orifice 53 by depressing pump plunger 52.

25                   Other spray means known in the art that may be used with the containers of the invention include, but are not limited to, a squeeze spray which would be activated by squeezing the container, or an atomizer spray bulb, as disclosed in The Wiley Encyclopedia of Packaging Technology, John Wiley and Sons, New York, 1986.

5           In an alternative embodiment, products such as liquid surfactant products may be dispensed from containers 6 as foams by the suitable entrainment of air in the liquid as it is dispensed. For example, U.S. 5,271,530, U.S. 5,570,819, U.S. 4,022,351, U.S. 5,037,006, U.S. 5,364,031 and U.S. 5,462,208 describe foam dispensing nozzles and pumps, these  
10           patents being incorporated herein in their entirety by reference. The foam is typically expelled from containers containing such nozzles and pumps by either squeezing the container or by activating a pump.

          Another embodiment is directed to a container having a neck finish adapted to the dispensing of powdered solids such as talcum powder as  
15           illustrated in FIGS. 8, 9, 10A, 10B, and 10C. The neck finish 60 of the container contains grooves 61 that communicate with the void volume of the container, and flat surfaces 62. Closure 63 mates with the neck finish 60 in a snap-fit fashion. The closure, 63 contains one or more holes 64 preferably in a pattern that coincides with the pattern of channels 61 in the  
20           neck finish 60. The closure is free to rotate at least a portion of a revolution when in mated contact with the neck finish. The open position, which permits the powder to be dispensed from the container, is illustrated in FIG. 10B, wherein the holes 64 in closure 63 are aligned with the channels 61 in neck finish 60. Similarly, FIG. 10C shows the closed position of the closure whereby the closure is rotated 30 degrees from its position shown in FIG.  
25           10B.

          The containers of the invention may be comprised of any material that may be formed into the shape desired and which is inert to the materials contained therein. Preferred materials include any resilient



5 polymeric material commonly used in the container-making art including, but not limited to, polyethylene, polypropylene, polyvinyl chloride based resins, polyethylene terephthalate, or copolymers or mixtures thereof.

"Copolymers," as used herein shall mean any polymer having two or more monomer components.

10 Various grades of polyethylene, including low density polyethylene, medium density polyethylene, high density polyethylene or copolymers or mixtures or blends thereof are frequently compatible with toiletry products, and are preferred materials for the containers of the invention. Low density polyethylene yields a bottle that is relatively easy to squeeze, while high  
15 density polyethylene bottles are relatively stiff. In the case of liquid products that are dispensed by squeezing the container, a 50:50 blend of low density and high density polyethylene is preferred. In the case of powders, where the desired dispensing mode is by shaking the container, a stiffer container produced from high density polyethylene is preferred.

20 The thickness of the exterior walls, i.e. panels, first side, second side, and the like, may be of any thickness desired, may vary within a container, and may depend on the desired end use of the container and the contents stored therein. Preferably the thickness of the walls ranges from about 10 mils to about 50 mils, and preferably from about 30 mils to about 40 mils.  
25 While such thicknesses are preferred as providing a readily resilient container, it is to be understood that other wall thicknesses may be produced to satisfy a particular need and yet fall within the scope of the present invention.

The containers of the present invention can be formed by any

5 conventional technique known in the art for producing containers including,  
but not limited to, extrusion blow molding, injection blow molding, stretch  
blow molding, and the like. Details of such processes are disclosed in, for  
example, The Wiley Encyclopedia of Packaging Technology, John Wiley  
and Sons, New York, 1986. Extrusion blow molding is the process of  
10 choice.

One noteworthy characteristic of the container of the present  
invention is that it fits comfortably in the hands of both adults and small  
children. Another noteworthy characteristic is that the containers of the  
present invention dispense product using relatively low hand force, and are  
15 therefore preferred by small children and adults lacking in hand strength.  
Yet another noteworthy characteristic is that the containers of the invention  
incorporate design features that prevent the container from slipping for the  
users' hands, particularly when the hands are wet. Yet another noteworthy  
feature of the containers of the invention is that they possess surfaces that  
20 are readily available for printing or labeling.

The invention illustratively disclosed herein suitably may be practiced in  
the absence of any component, ingredient, or step which is not specifically  
disclosed herein. Several examples are set forth below to further illustrate the  
nature of the invention and the manner of carrying it out. However, the  
25 invention should not be considered as being limited to the details thereof.

### **Examples**

#### **Test Methods Used in the Examples:**

1) **Dispensing Force Test:** The force required for dispensing the  
contents from a container or "dispensing force" was measured using a

5      **Uniforce Experimenters Kit (parallel port input/output version) manufactured**  
by Force Imaging Technologies, having thin (0.003mm), flexible sensor  
strips that may be mounted on a variety of surfaces with little or no effect on  
the test sample, and both software (Uniform Sensor System version 5) and  
10      **hardware that interfaces the sensor to a personal computer for data**  
**acquisition.**

15      A sensor strip with the proper force range (usually 0-10lbs) is  
mounted on one of the panels of the sample container with the sensor  
mounted at the location where a user's thumb would typically contact the  
container during normal dispensing of product from the container as shown  
in FIG. 14. For an adult-sized hand, the thumb normally contacts the panel  
at a point between about 70 percent to about 80 percent of the length of the  
panel, closest to the closed end 2 of the container. The software is set in  
the record data mode with a time duration of between 1.25 – 1.75 sec. The  
20      container is held in a user's hand with the thumb on one face of the  
container and the other fingers on the opposite face of the container. With  
the thumb on the sensor, the container is held in a vertical position with the  
dispensing orifice directed downward over a beaker positioned on a model  
PE 600 Mettler electronic balance. The containers are then manually  
25      squeezed with enough force to open the valve and dispense a standard  
quantity of product (3-6 g) contained therein. The maximum force that is  
required to open the valve and to dispense each quantity of product is  
output by the computer program. That force value, along with the weight of  
product dispensed, is tabulated manually by the operator.

After resetting the balance to zero, the above sequence is repeated

5       until the container is empty of all product. The data collected by the operator is then used to generate a graph showing the force required to open the valve as a function of the cumulative amount of product dispensed from the container.

**Example 1: Dispensing Force Measurement:**

10       The force required for dispensing product from containers of the present invention, as well as for various commercially available containers shown in Table 1 below, was measured in accordance with the Dispensing Force Test described above. Each of the containers in Table 1 was fitted with a closure containing a silicone dispensing valve available from  
15       Seaquist Closures, Mukwonago, Wisconsin.

5

**Table 1. Types of Containers**

<b>Legend Number</b>	<b>Product</b>	<b>Container Size (mL)</b>	<b>Product Source</b>
<b>1</b>	<b>Lever 2000 Body Wash</b>	<b>354</b>	<b>Lever Bros.</b>
<b>2</b>	<b>Vaseline Intensive Care Moisturizing Body Wash</b>	<b>177</b>	<b>Cheeseborough-Ponds</b>
<b>3</b>	<b>Baby Magic Moisturizing Baby Bath</b>	<b>200</b>	<b>Mennen</b>
<b>4</b>	<b>Soft Soap Gentle Antibacterial Body Wash</b>	<b>354</b>	<b>Colgate-Palmolive</b>
<b>5</b>	<b>Container of the invention as shown in FIG. 4</b>	<b>100</b>	
<b>6</b>	<b>container of the invention as shown in FIG. 1 and FIG. 6A, 6B</b>	<b>200</b>	

To remove any inconsistencies arising from dispensing products of different viscosities, water was substituted for the as-packaged and purchased contents of all containers. The results of these force measurements are shown in FIG. 11.

10

It is evident from FIG. 11 that the containers of the present invention require the lowest amount of force to dispense product relative to the other containers tested. Accordingly, the containers of the invention are expected to be easiest to dispense product by those having weak hand strength such as small children and elderly adults.

15

5

### Consumer Research Tests

10

In-home consumer research tests were conducted of the containers of the invention shown in Figures 5A, 5B and 5C. Consumers were asked to compare the container of the invention to a prior art container shown in Figures 12A and 12B which is currently used commercially as a container for childrens' toiletries. Containers were evaluated in 100 households by mothers and by children aged 6 to 10. The containers were rated for ease of handling by asking the participants to rate the container in the following categories:

15

1. very easy for child to handle
2. easy for child to handle
3. neither easy nor difficult to handle
4. difficult for child to handle
5. very difficult for child to handle

20

The results of this "handleability" measure are shown in Table 2 below:

Table 2. Handleability of Containers

	percentage who found the container to be very easy to handle or easy to handle	
	prior art container (Figures 12A and 12B)	Container of the invention (Figures 5A, 5B, 5C)
Mothers	84	94
Children	82	93

5           Thus, the data of Table 2 indicate that both mothers and children  
found the container of the invention to be significantly easier to handle than  
the prior art container of Figures 12A and 12B. The dimensions and  
structural features of the containers of the invention enumerated above are  
believed to permit the containers of the invention to be easily gripped and  
10 handled by both adults and young children in an ergonomically preferable  
manner. These dimensions and features are believed to account for the  
perceived preference of consumers in terms of handleability of the  
containers of the invention relative to prior art containers.

#### **Uniqueness of the Containers of the Invention**

15           Children were asked to assess the uniqueness of the design of the  
container of the invention in comparison to the prior art container of Figures  
12A and 12B. The subjects were asked to rate the containers as follows:

1. Extremely new and different
2. Very new and different
- 20 3. Somewhat new and different
4. Slightly new and different
5. Not at all new and different

The results of this "uniqueness" measure are shown below:

5

Table 3. Uniqueness of Containers

	percentage of children who found the container to be extremely new and different or very new and different	
	prior art container (Figures 12A and 12B)	Container of the invention (Figures 5A, 5B, 5C)
Children	39	55

Thus, children found the containers of the invention to be significantly more unique than prior art containers.

10

In the foregoing description, it will be readily apparent that modifications may be made to the invention without departing from the concepts disclosed herein. Such modifications are to be considered as included in the following claims, unless these claims by their language expressly state otherwise.



5

**We claim:**

1. **A dispensing container comprising:**

- a. **an open end, a closed end, and a body, said body having a front, a rear, a first side and a second side, an upper portion adjacent said open end, a lower portion adjacent said closed end and a central portion intermediate said upper and lower portions;**
- b. **a first recess on said front of said body and a second recess on said rear of said body, said recesses being adjacent said closed end and said sides, said first recess defining a first panel on the front of said container and said second recess defining a second panel on the rear of said container; and**
- c. **a neck defining an opening in said container, said neck having a finish suitable for accommodating a closure.**

10

15

2. **The container of claim 1 wherein the container comprises a resilient polymeric material.**

20

3. **The container of claim 2 wherein the resilient polymeric material comprises low density polyethylene, medium density polyethylene, high density polyethylene or mixtures thereof.**

25

4. **The container of claim 1 wherein the upper body portion is substantially circular in cross-section and has a circumference between about 4.7 and about 6.0 inches.**

5. **The container of claim 1 wherein the upper body portion is substantially circular in cross-section and has a circumference between about 5.0 to about 5.7 inches.**

- 5        6. The container of claim 1 wherein the upper body portion is substantially circular in cross-section and has a circumference between about 5.2 and about 5.5 inches.
7. The container of claim 4 wherein said upper body portion has a length of at least about 0.2 inches.
- 10       8. The container of claim 1 wherein said central body portion is substantially oval in cross-section and increases in circumference from said upper body portion to said lower body portion.
9. The container of claim 1 wherein said lower body portion is substantially oval in cross-section and decreases in circumference from said central body portion to said closed end.
- 15       10. The container of claim 1 wherein said closed end has a surface which permits the container to remain standing in an upright orientation.
11. The container of claim 1 wherein said recess has a depth sufficient to permit the container to be held in an inverted position by a first support and a second support, whereby said first support is positioned in the recess on the front of the container and said second support is positioned in the recess on the rear of said container and the first support and the second support do not contact the panels of said container.
- 20       12. The container of claim 1 wherein said panels have a major dimension in the direction from the open end to the closed end of the container and a minor dimension from the first side to the second side of the container, said panels being curved in the minor dimension and substantially straight in the major direction.
- 25

5        13. The container of claim 1 wherein the finish is selected from a threaded finish, a press-fit finish, a snap-on finish, a snap and turn finish or an oriented thread finish.

14. The container of claim 1 which has a generally exclamation-point shape when in an inverted orientation.

10       15. The container of claim 1 which further comprises finger grip means.

16. A dispensing container comprising:

15       a. an open end, a closed end, and a body, said body having a front, a rear, a first side and a second side, an upper portion adjacent said open end, a lower portion adjacent said closed end and a central portion intermediate said upper and lower portions;

      b. a first recess on said front of said body and a second recess on said rear of said body, said recesses being adjacent said closed end and said sides, said first recess defining a first panel on the front of said container and said second recess defining a second panel on the rear of said container;

20       c. a neck defining an opening in said container, said neck having a finish suitable for accommodating a closure; and

      d. a closure.

25       17. The container of claim 16 wherein the container comprises a resilient polymeric material.

18. The container of claim 17 wherein the resilient polymeric material comprises low density polyethylene, medium density polyethylene, high

5           density polyethylene or mixtures thereof.

19. The container of claim 16 wherein the upper body portion is substantially circular in cross-section and has a circumference between about 4.7 and about 6.0 inches.

10          20. The container of claim 16 wherein the upper body portion is substantially circular in cross-section and has a circumference between about 5.0 to about 5.7 inches.

21. The container of claim 16 wherein the upper body portion is substantially circular in cross-section and has a circumference between about 5.2 and about 5.5 inches.

15          22. The container of claim 19 wherein said upper body portion has a length of at least about 0.2 inches.

23. The container of claim 16 wherein said central body portion is substantially oval in cross-section and increases in circumference from said upper body portion to said lower body portion.

20          24. The container of claim 16 wherein said lower body portion is substantially oval in cross-section and decreases in circumference from said central body portion to said closed end.

25. The container of claim 16 wherein said closed end has a surface which permits the container to remain standing in an upright orientation.

25          26. The container of claim 16 wherein said recess has a depth sufficient to permit the container to be held in an inverted position by a first support and a second support, whereby said first support is positioned in the recess on the front of the container and said second support is positioned in the

5       recess on the rear of said container and the first support and the second support do not contact the panels of said container.

27. The container of claim 16 wherein said panels have a major dimension in the direction from the open end to the closed end of the container and a minor dimension from the first side to the second side of the container, said  
10       panels being curved in the minor dimension and substantially straight in the major direction.

28. The container of claim 16 wherein the finish is selected from a threaded finish, a press-fit finish, a snap-on finish, a snap and turn finish or an oriented thread finish.

15       29. The container of claim 16 which further comprises finger grip means.

30. The container of claim 16 wherein said container is adapted for dispensing liquids.

31. The container of claim 16 wherein said container is adapted for dispensing solids.

20       32. The container of claim 16 wherein said container is adapted for dispensing liquids in the form of an aerosol.

33. The container of claim 30 wherein said closure comprises a body portion and a lid portion, said body portion of said closure having an orifice for dispensing liquids and said lid portion of said closure having sealing means  
25       for sealing said orifice.

34. The container of claim 33 wherein said lid portion of said closure is hingedly connected to said body portion of said closure.

5

35. The container of claim 30 wherein said closure comprises a valve, said valve having a threshold pressure below which liquid is not dispensed from said container.

10

36. The container of claim 30 wherein said closure has a surface which permits the container to remain standing when the container is in an inverted orientation.

37. The container of claim 30 wherein said closed end and said closure have surfaces which permit the container to remain standing in either an upright or inverted orientation.

15

38. The container of claim 30 wherein said closure has a substantially uniform circular circumference, said closure circumference being substantially equal to the circumference of the upper portion of the body of said container.

20

39. The container of claim 30 wherein said closure has a base and a top, said base of said closure being adjacent said upper portion of said body of said container, said closure having a substantially circular circumference at said base of said closure which is substantially equal to the circumference of said upper portion of the body of said container, said circumference of said closure increasing in size from the base of the closure to the top of the closure.

25

40. The container of claim 16 which has a generally exclamation-point shape when in an inverted orientation.

41. The container of claim 16 wherein said container is adapted for dispensing liquids in the form of a foam.

5

**42. The container of claim 32 wherein the closure comprises a dispensing pump.**

**43. A container adapted for the dispensing of liquids, said container comprising a resilient polymeric material, said container further comprising:**

10

**a. an open end, a closed end, and a body, said body having a front, a rear, a first side and a second side, an upper portion adjacent said open end, a lower portion adjacent said closed end and a central portion intermediate said upper and lower portions;**

15

**b. a first recess on said front of said body and a second recess on said rear of said body, said recesses being adjacent said closed end and said sides, said first recess defining a first panel on the front of said container and said second recess defining a second panel on the rear of said container;**

20

**c. a neck defining an opening in said container, said neck having a finish suitable for accommodating a closure;**

25

**d. a closure adapted for dispensing liquids; wherein:**

**1. the upper body portion is substantially circular in cross-section and has a circumference of between about 4.7 and about 6.0 inches;**

**2. said upper body portion has a length of at least about 0.2 inches;**

**3. said central body portion is substantially oval in cross-section and increases in circumference from said upper body portion to said lower body portion;**

4. said lower body portion is substantially oval in cross-section and decreases in circumference from said central body portion to said closed end; and

5

5. said panels have a major dimension in the direction from the open end to the closed end of the container and a minor dimension from the first side to the second side of the container, said panels being curved in the minor dimension and substantially straight in the major direction

10

44. A container substantially as hereinbefore described with reference to the accompanying drawings.





Application No: GB 9804824.2  
Claims searched: 1-44

Examiner: Gareth Prothero  
Date of search: 30 November 1998

**Patents Act 1977**  
**Search Report under Section 17**

**Databases searched:**

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK Cl (Ed.P): B8D (DCW4, DCW10, DCD, DCE)

Int Cl (Ed.6): B65D 1/02, 1/32, 1/40, 23/10

Other: Online: WPI

**Documents considered to be relevant:**

Category	Identity of document and relevant passage	Relevant to claims
Y	GB 2288587 A (GET A GRIP) see fig 1, and abstract.	15, 29
X Y	US 4949861 A (COCHRAN) see figs 1, 4 and 5, and col 1, lines 36 to 41.	X: 1-8, 10-14, 16-23, 25-28, 30-43 Y: 15, 29
X Y	US 4946053 A (CONRAD) see abstract, and figs 1 and 2.	X: 1-14, 16-28, 30-43 Y: 15, 29
X Y	US 4318882 A (PURUSHOTTAM) see figs 6 and 7, and col 11, lines 11 to 21.	X: 1-7, 10-14, 16-22, 25-28, 30-43 Y: 15, 29

X Document indicating lack of novelty or inventive step  
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